PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF

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The Etiology of Rheumatic Fever.—POYNTON and PAINE (*The Lancet*, September 22, 1900, p. 861, and September 29, 1900, p. 932) have isolated from eight successive cases of rheumatic fever a diplococcus which they believe to be a cause of rheumatic fever. They do not claim that the organism is constantly present in rheumatism, nor do they definitely assert that it is the only cause of the disease.

They first give a concise review of the literature on the bacteriology of rheumatic fever, including among others the important contributions of Chvostek, Singer, Achalme, Thiroloix, Griboulot, Westphal, and Wassermann. Granting that rheumatism is a microbic disease, the researches of the various investigators present a diversity of views.

The first view is that there is no specific organism, but that rheumatism is but a form of septicæmia which owes its origin to staphylococcal and streptococcal infection.

According to the second view a specific diplococcus is regarded as the cause of rheumatism. This is the view to which the authors adhere with some limitation to the term "specific."

The third view maintains that the cause is a specific bacillus. Achalme and his followers were supporters of this view.

The fourth view raises the question of a mixed infection of bacilli and cocci, an analogy to which is supplied by diphtheria.

According to the fifth view, rheumatic fever is not a disease sui generis, but a particular reaction of the tissues to varied infections.

Poynton and Paine commenced their investigation with the intention of confirming, if possible, Achalme's results. They were unable to obtain a bacillus morphologically resembling the anthrax bacillus either in the cultures or in the tissues as Achalme had done. On the contrary, they obtained in eight successive cases a diplococcus which grew in liquid media in streptococcal chains. This organism is in the form of minute cocci associated in pairs, the individual elements of which vary somewhat in size but average 0.5 μ in diameter. In liquid media they grow in chains of varying length; in solid media in masses that resemble the arrangement of staphylococci. The organism grows both aërobically and anaërobically, but better in the latter way. It grows best in a medium of milk and bouillon slightly acidified with lactic acid. The cocci stain with the various aniline dyes, but are easily decolorized by Gram's method.

This organism was isolated in eight successive cases of acute rheumatism. It was present in pure culture in five cases. It was obtained (*a*) from the blood of living patients suffering from acute rheumatic pericarditis; (*b*) from the pericardial fluid and from the fragments of granulations removed from the valves after death, and (*c*) from the throat of living patients suffering from rheumatic pericarditis. The organism was isolated in pure culture from the joint exudation, heart-blood, urine from the bladder, and cerebro-spinal fluid of rabbits that had been inoculated with a sufficient dosage. They have demonstrated the diplococcus in the cardiac valves, pericardium, and tonsils, and in a nodule in fatal cases of rheumatism. They also demonstrated it in the cardiac valves, pericardium, joint exudation, kidneys, liver, connective tissues, pleuræ, cerebro-spinal fluid, lungs, and urine of rabbits inoculated intravenously.

The changes in the rabbit following the intravenous injection of this organism are very suggestive of its close relationship with the etiology of rheumatic fever. It produces a polyarthritis, bursitis, and tenosynovitis. The polyarthritis may completely disappear. Where the arthritis persists the joint effusion becomes turbid with fibrin and cellular elements; in other cases the joint effusion is clear. It causes a multiple valvulitis and pericarditis, both non-suppurative. It produces plastic pleurisy and pneumonia and a fatty degeneration and destruction of the muscle fibres of the myocardium similar to that found in the human heart in severe rheumatic carditis. It has not led to suppurative foci in the viscera. The urine is acid and loaded with urates. The clinical symptoms are characterized by multiple painful joint swellings, wasting, and moderate pyrexia.

Poynton and Paine, in discussing the point whether this organism is the cause of rheumatic fever, say that, in the face of the researches of several competent observers, they cannot claim that this diplococcus is the only cause of rheumatic fever. That it is one cause they think they have proved to all practical purposes by their investigations. They further believe it highly probable that it will prove to be the cause of all cases of rheumatic fever which conform to the usual type of the disease, for the disease in man, as they state, is a very definite one, and therefore probably caused by a specific micro-organism.

Some Points about Post-diphtheritic Paralysis.—MEYER (*The Lancet*, September 22, 1900, p. 869) made an analysis of the cases of diphtheria admitted to the Park Hospital, London, in 1899, in which paralysis or paresis